

Docket No.: P2001,0520

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : BERTHOLD HAHN ET AL.
Filed : CONCURRENTLY HEREWITH
Title : METHOD FOR FABRICATING A LIGHT-EMITTING DEVICE
BASED ON A GALLIUM NITRIDE-BASED COMPOUND
SEMICONDUCTOR, AND LIGHT-EMITTING DEVICE BASED
ON A GALLIUM NITRIDE-BASED COMPOUND
SEMICONDUCTOR

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with 37 C.F.R. 1.98 copies of the following patents and/or publications are submitted herewith:

U.S. Patent No. 6,015,979 (Sugiura et al.), dated January 18, 2000;

European Patent Application EP 0 732 754 A2 (Koike et al.), dated September 18, 1996;

European Patent Application EP 0 599 224 B1 and A1 (Nakamura et al.), dated June 1, 1994;

European Patent Application EP 0 993 048 A2 (Ishida et al.), dated April 12, 2000;

Kim, I.-H. et al.: "Formation of V-Shaped Pits in InGaN/GaN Multiquantum Wells and Bulk InGaN Films", Applied Physics Letters, Vol. 73, No. 12, September 21, 1998, pp. 1634-1636;

Chen, Y. et al.: "Pit Formation in GaInN Quantum Wells", Applied Physics Letters, Vol. 72, No. 6, February 9, 1998, pp. 710-712;

Wu, X. H. et al.: "Dislocation Generation in GaN Heteroepitaxy", Journal of Crystal Growth, Elsevier Science B.V., 189/190, 1998, pp. 231-243;

Kawaguchi, Y. et al.: "The Formation of Crystalline Defects and Crystal Growth Mechanism in $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ Heterostructure Grown by Metalorganic Vapor Phase Epitaxy", Journal of Crystal Growth, Elsevier Science B.V., 189/190, 1998, pp. 24-28;

Gallart, M. et al.: "CW and Time-Resolved Optical Spectroscopy of GaN Epilayers and GaN-AlGaIn Quantum Wells Grown on A-Plane Sapphire", Phys.Stat.Sol., (b), 216, 365, 1999, pp. 365-369;

Keller, S. et al.: "Spiral Growth of InGaIn Nanoscale Islands on GaN", Japanese Journal of Applied Physics, Vol. 37, Part 2, No. 4B, April 15, 1998, pp. L431-L434;

Hangleiter, A. et al.: "Optical Absorption and Excitation Spectroscopy on GaInN/GaN Double Heterostructures and Quantum Wells", Materials Science Forum, Trans Tech Publications, Switzerland, Vols. 267-268, 1998, pp. 1287-1290;

Im, J. S. et al.: "Reduction of Oscillator Strength due to Piezoelectric Fields in $\text{GaN}/\text{Al}_x\text{Ga}_{1-x}\text{N}$ Quantum Wells", The American Physical Society, Physical Review B, Vol. 57, No. 16, April 15, 1998, pp. R9435-R9438;

Nakamura, S. et al.: "High-Power InGaIn Single-Quantum-Well-Structure Blue and Violet Light-Emitting Diodes", American Institute of Physics, Appl. Phys. Lett. 67, (13), September 25, 1995, pp. 1868-1870;

Mukai, T.: "InGaIn-Based Blue Light-Emitting Diodes Grown on Epitaxially Laterally Overgrown GaN Substrates", Publication Board, Japanese Journal of Applied Physics, Vol. 37, Part 2, No. 7B, July 15, 1998, pp. L839-L841;

Lester, S. D. et al.: "High Dislocation Densities in High Efficiency GaN-Based Light-Emitting Diodes", American Institute of Physics, Appl. Phys. Lett., Vol. 66, No. 10, March 6, 1995, pp. 1249-1251;

International Search Report, dated October 25, 2002.

If no translation of pertinent portions of any foreign language patents or publications mentioned above is included with the aforementioned copies of those applications, patents and/or publications, it is because no existing translation is readily available to the applicant. As per the Notice in 1273 OG 55 (August 5, 2003) no copies of any above-mentioned U.S. patents and U.S. patent application publications are submitted for any application filed after June 30, 2003.

Respectfully submitted,



For Applicants

WERNER H. STEMER
REG. NO. 34,956

Date: January 20, 2004

Lerner and Greenberg, P.A.
Post Office Box 2480
Hollywood, FL 33022-2480
Tel: (954) 925-1100
Fax: (954) 925-1101

/nt/kf

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: <hr/> Applicant: BERTHOLD HAHN ET AL. <hr/> Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A	6,015,979	1/18/00	Sugiura et al.			
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J	0 732 754 A2	9/18/96	Europe			
	K	0 599 224 B1 and A1	6/1/94	Europe			
	L	0 993 048 A2	4/12/00	Europe			
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Kim, I.-H. et al.: "Formation of V-Shaped Pits in InGaN/GaN Multiquantum Wells and Bulk InGaN Films", Applied Physics Letters, Vol. 73, No. 12, September 21, 1998, pp. 1634-1636					
		Chen, Y. et al.: "Pit Formation in GaInN Quantum Wells", Applied Physics Letters, Vol. 72, No. 6, February 9, 1998, pp. 710-712					
EXAMINER				DATE CONSIDERED			

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: <hr/> Applicant: BERTHOLD HAHN ET AL. <hr/> Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J						
	K						
	L						
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Wu, X. H. et al.: "Dislocation Generation in GaN Heteroepitaxy", Journal of Crystal Growth, Elsevier Science B.V., 189/190, 1998, pp. 231-243					
		Kawaguchi, Y. et al.: "The Formation of Crystalline Defects and Crystal Growth Mechanism in $\text{In}_x\text{Ga}_{1-x}\text{N}/\text{GaN}$ Heterostructure Grown by Metalorganic Vapor Phase Epitaxy", Journal of Crystal Growth, Elsevier Science B.V., 189/190, 1998, pp. 24-28					
EXAMINER				DATE CONSIDERED			

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: Applicant: BERTHOLD HAHN ET AL. Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J						
	K						
	L						
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Gallart, M. et al.: "CW and Time-Resolved Optical Spectroscopy of GaN Epilayers and GaN-AlGaIn Quantum Wells Grown on A-Plane Sapphire", Phys.Stat.Sol., (b), 216, 365, 1999, pp. 365-369					
		Keller, S. et al.: "Spiral Growth of InGaIn Nanoscale Islands on GaN", Japanese Journal of Applied Physics, Vol. 37, Part 2, No. 4B, April 15, 1998, pp. L431-L434					
EXAMINER				DATE CONSIDERED			

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: <hr/> Applicant: BERTHOLD HAHN ET AL. <hr/> Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J						
	K						
	L						
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Hangleiter, A. et al.: "Optical Absorption and Excitation Spectroscopy on GaInN/GaN Double Heterostructures and Quantum Wells", Materials Science Forum, Trans Tech Publications, Switzerland, Vols. 267-268, 1998, pp. 1287-1290					
		Im, J. S. et al.: "Reduction of Oscillator Strength due to Piezoelectric Fields in GaN/Al _x Ga _{1-x} N Quantum Wells", The American Physical Society, Physical Review B, Vol. 57, No. 16, April 15, 1998, pp. R9435-R9438					
EXAMINER				DATE CONSIDERED			

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: Applicant: BERTHOLD HAHN ET AL. Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J						
	K						
	L						
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Nakamura, S. et al.: "High-Power InGaN Single-Quantum-Well-Structure Blue and Violet Light-Emitting Diodes", American Institute of Physics, Appl. Phys. Lett. 67, (13), September 25, 1995, pp. 1868-1870					
		Mukai, T.: "InGaN-Based Blue Light-Emitting Diodes Grown on Epitaxially Laterally Overgrown GaN Substrates", Publication Board, Japanese Journal of Applied Physics, Vol. 37, Part 2, No. 7B, July 15, 1998, pp. L839-L841					
EXAMINER				DATE CONSIDERED			

FORM PTO-1449 (SUBSTITUTE) U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE INFORMATION DISCLOSURE STATEMENT BY APPLICANT (37 CFR 1.98(b))				Attorney Docket No.: P2001,0520 Appl. No.: <hr/> Applicant: BERTHOLD HAHN ET AL. <hr/> Filing Date: January 20, 2004 Group Art Unit:			
EXAMINER INITIALS		PATENT NO.	DATE	PATENTEE	CLASS	SUB CLASS	FILING DATE
	A						
	B						
	C						
	D						
	E						
	F						
	G						
	H						
	I						
FOREIGN PATENT DOCUMENT							
		DOCUMENT NO.	DATE	COUNTRY	CLASS	SUB CLASS	TRANSL. YES NO
	J						
	K						
	L						
	M						
	N						
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, etc.)							
		Lester, S. D. et al.: "High Dislocation Densities in High Efficiency GaN-Based Light-Emitting Diodes", American Institute of Physics, Appl. Phys. Lett., Vol. 66, No. 10, March 6, 1995, pp. 1249-1251					
EXAMINER				DATE CONSIDERED			